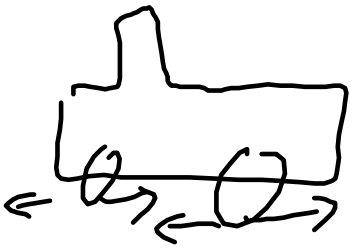
Hecht questions, Hooke's Law activity, Q75



$F_N = F_g$

$F_f = \mu_s F_N = \mu mg = ma$

$F_f = F_{net} = ma$

$a = \mu_s g$

Q

$F_f =$

81

$F_f = ma = \mu_s mg$

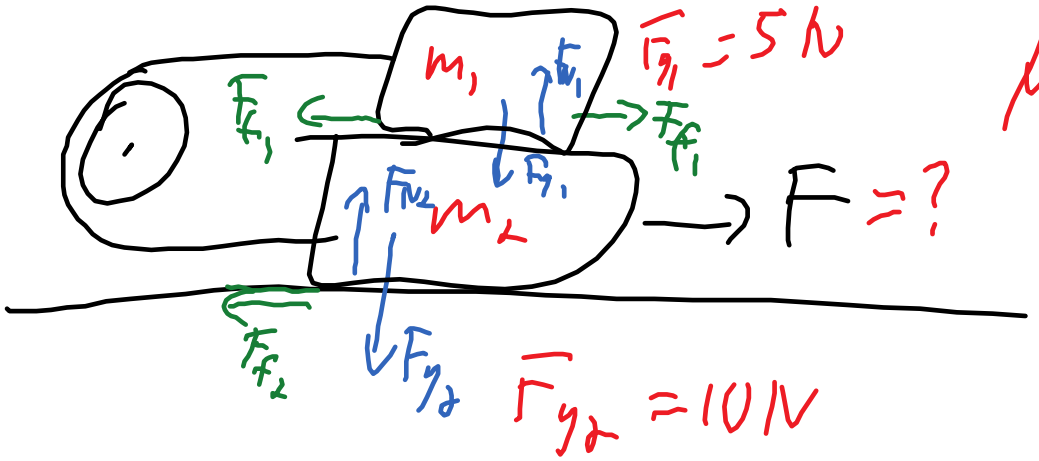
$a = 0.5(1.6)$

$a \simeq 4.9\ m/s^2$

$v^2 = u^2 + 2as$

$0 = \left[50\ km/h \left(\frac{1000\ m/km}{3600\ s/h}\right)\right]^2 + 2(-4.9)s$

$s \simeq 197\ m$



$\mu_k = 0.40$

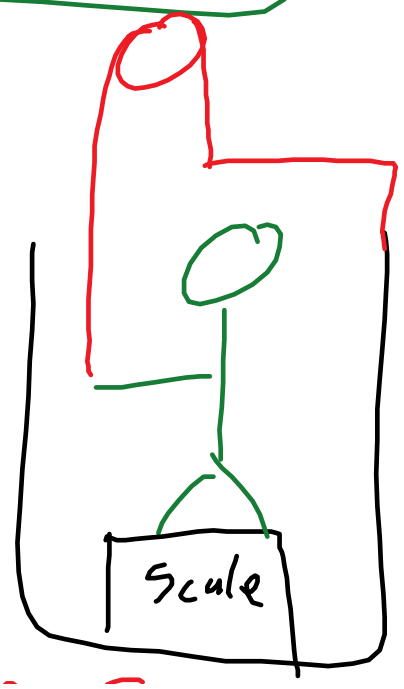
$$F = F_{f_1} + F_{f_1} + F_{f_2}$$

$$F = \mu F_{N_1} + \mu F_{N_1} + \mu F_{N_2}$$

wow! both masses

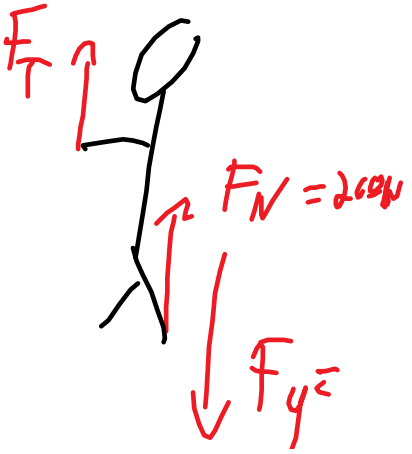
$$F = 0.4(5N) + 0.4(5N) + 0.4(15)$$

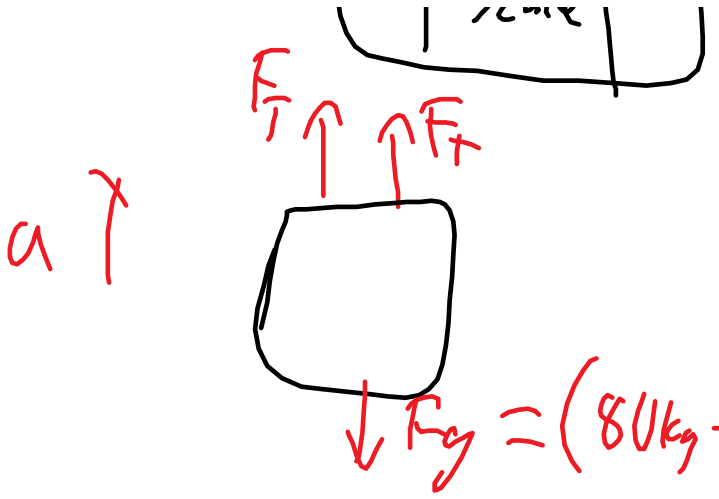
$$F = 10N$$



$$F_{net} = 2F$$

$$F_T + F_N - F_{g_1} = m_1 a$$





$$F_{net} = ma = \Sigma F$$

$$m_t a = 2F_T - F_{g_t} = 120a = 2F_t - 1177.2N$$

$$m_1 a = F_T + F_N - F_{g_1} =$$

$$80a = F_t + 200N - 784.8N$$

$$F_t = 80a + 584.8N$$

$$120a = 2(80a + 584.8N) - 1177.2N$$

$$120a = 160a + 1169.6 - 1177.2N$$

$$-40a = -7.6N$$

$a = 0.19 m/s^2$

Lab activity
Hooke's Law

pull on a spring and an elastic band with a force scale. Record the extension (change in length) of the spring and elastic band for various forces. Graph both sets of data on one graph and get the equations for next class.

x(cm)	F on spring(N)	F on elastic(N)
0	0	0
2.0		
4.0		
6.0		

8.0		
10.0		
12.0		